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PEARNE & GORDON LLP
1801 EAST 9TH STREET
SUITE 1200
CLEVELAND, OH 44114-3108

EXAMINER

GARCIA JR, RENE

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| ART UNIT | PAPER NUMBER |
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2853

DATE MAILED: 05/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/500,989

Applicant(s)

COLOMBAT ET AL.

Examiner

Rene Garcia, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 27 July 2004.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the first deflection electrode (2') The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 2' – page 18, lines 15 & 28 [and other places in specification and claims]. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance. must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing

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sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The abstract of the disclosure is objected to because legal phraseology used in abstract.

Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because of the following informalities: 2' not shown in drawings, page 18, line 15 & 28 and other places in specification and claims; Page 18, line 24 – unrecognized character before “X perpendicular”.

Appropriate correction is required.

Claim Objections

6. Claims 1, 3 & 4 are objected to because of the following informalities: reference to deflection electrode 2' not shown in drawings. Appropriate correction is required.

7. Claim 1, line 10, 17 & 18; Claim 2, line 4 & 6; Claim 3, line 4; Claim 4, line 4; Claim 5, line 7; Claim 6, line 5; Claim 7, line 4; Claim 10, line 4; Claim 12, line 5; Claim 15, line 3 are objected to because of the following informalities: “jet ejection nozzles” or “nozzles”, should either reference as “nozzles” or “jet ejection nozzles” to avoid any confusion as to reference to separate nozzles being claimed. Appropriate correction is required.

8. Claims 6-16 are objected to because of the following informalities: “Print Head” should be “Twin-nozzle print head” to avoid any confusion as to reference to separate print heads being claimed. Appropriate correction is required.

9. Claim 6 recites the limitation “said inkjet” in line 6. There is insufficient antecedent basis for this limitation in the claim.

10. Claim 8, line 4; Claim 10, line 7; Claim 13, line 5; Claim 14, line 7 are objected to because of the following informalities: “drops”, should be “charged drops” to avoid any confusion as to reference to separate drops being claimed. Appropriate correction is required.

11. Claim 11 is objected to because of the following informalities: grammatical sentence structure suggest changing “...that one edge the most downstream of a first deflection electrode

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is more..." to "...that one edge, the most downstream of a first deflection electrode, is more..." for better flow. Appropriate correction is required.

12. Claim 16, line 3 is objected to because of the following informalities: "gutter" should be "recovery gutter" to avoid any confusion as to reference to separate gutters being claimed.

Appropriate correction is required.

13. Claim 14 recites the limitation "said first jet" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claims 1-4 and 11 are rejected under 35 U.S.C. 102(b) as being anticipate by Houston (US 4,990,932).

Houston discloses the following claimed limitations:

*regarding claim 1, twin-nozzle print head/10/ (fig. 1) comprising:

*ink drop generator assembly/29/ having two inkjet ejection nozzles/33a, 33b/, each of the nozzles having an axis, and arranged along this axis (col. 5, lines 35-40; fig. 2)

*charge electrodes/42/ (fig. 1; col. 5, lines 60-68)

*first and second deflection electrodes/left and right deflection plates, 47 & 48/ deflecting charged drops/17/ (fig. 1; col. 6, lines 7-11), these deflection electrodes/47,48/ each having relative to jet ejection nozzles/33a, 33b/ an upstream part/end close to nozzles/ and a

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downstream part/**end close to gutter,49/** (fig. 2), an active surface/**surface facing droplet/** (fig. 2) of each deflection electrode/**47,48/** being a surface of said electrode lying opposite a succession of drops/**17/** (col. 5, lines 39-40)

*single ink drop recovery gutter/**49/** for both nozzles/**33a, 33b/** (fig. 2; col. 6, lines 22-25)

*characterized in that the axes of nozzles/**33a, 33b/** converge at a point located on an axis of a single inlet orifice/**open area of gutter,49/** of the single recovery gutter/**49/** in the vicinity of this orifice or upstream of this gutter/**49/** (Axis of nozzle has not been defined to relate to any structure claimed therefore axes are defined as an angle between axis of ejection of droplets perpendicular to plane defining nozzles and axis defined by said plane [fig. 2] for examination; vicinity is a broad term allowing for the axes convergence to be located anywhere in relation to orifice)

Regarding claim 1, "continuous inkjet deflection printer" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. However column 5, line 33 does recite necessary information to reject limitation should it be properly claimed as a limitation.

*regarding claim 2, plane of symmetry which is a plane perpendicular to a plane defined by the converging axes of jet ejection nozzles/**33a, 33b/** and containing a bisector of the angle formed between said converging axes of ink jet ejection nozzles/**33a, 33b/** (fig. 2; axis of nozzle

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has not been defined to relate to any structure claimed therefore axes are defined as an angle between axis of ejection of droplets perpendicular to plane defining nozzles and axis defined by said plane [fig. 2] for examination)

*regarding claims 3 & 4, first deflection electrode/48/ deflecting charged drops/17/ is a first electrode/48/ common to the drops/17/ derived from ink jet ejection nozzles/33a, 33b/, this common deflection electrode/48/ for charged drops/17/ being located between the second deflection electrodes/47/ for charged drops/17/ (fig. 2; col. 6, lines 25-31)

*regarding claim 17, printer characterized in that it is equipped with a print head according to any of the preceding claims (fig. 1 & 2; col. 5, lines 33 – 40; as claimed with reference to claims 1-4)

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 5, 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Houston (US 4,990,932) in view of Ebi et al. (US 4,381,513) and Cruz-Urbie (US 4,338,613).

Houston discloses the following claimed limitations:

*regarding claim 16, characterized in that orifice of gutter/49/ is of oblong shape (fig. 2)

Houston does not disclose the following claimed limitations:

*regarding claim 5, active surface of the first deflection electrode deflecting drops from a jet has a first concave longitudinal curvature whose local radius of longitudinal curvature is located in the plane formed by the converging axes of inkjet ejection nozzles, in that the active surface of the second deflection electrode deflecting drops from said same jet has a first convex longitudinal curvature, and in that the first deflection electrode deflecting drops from said jet, in its downstream part, has a recess having a contour

*regarding claim 6, contour has a most upstream point located in the vicinity of the intersection before recess of said first deflection electrode deflecting said jet, with the axis of said ejection nozzle of said inkjet

Cruz-Urbe disclose the following:

*regarding claim 5, active surface of the first deflection electrode/36/ (fig. 1) deflecting drops/24/ from a jet (fig. 1; col. 3, lines 59-61) has a first concave longitudinal curvature whose local radius of longitudinal curvature is located in the plane formed by the converging axes of inkjet ejection nozzles/orifice, 12/, (fig. 1, 4-6) in that the active surface of the second deflection electrode/36/ deflecting drops/24/ from said same jet has a first convex longitudinal curvature (Axis of nozzle has not been defined to relate to any structure claimed therefore axes are defined as an angle between axis of ejection of droplets perpendicular to plane defining nozzles and axis defined by said plane [fig. 1 & 5] for examination) for the purpose of having a non-uniform electric field whose potential gradient is sufficient to deflect the electrically neutral ink drops

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize an active surface of the first deflection electrode deflecting drops from a jet has a first concave longitudinal curvature whose local radius of longitudinal curvature is located in the plane formed by the converging axes of inkjet ejection nozzles, in that the active surface of the second deflection electrode deflecting drops from said same jet has a first convex longitudinal curvature as taught by Cruz-Urbe into Houston for the purpose of having a non-uniform electric field whose potential gradient is sufficient to deflect the electrically neutral ink drops

Ebi et al. discloses the following:

*regarding claim 5, first deflection electrode/6b/ deflecting drops/13/ from said jet (col 3, lines 10-15), in its downstream part, has a recess/6b'/ (fig. 4; col. 3, lines 24-32) having a contour (fig. 4) for the purpose of a counter measure to aerodynamic disturbance

*regarding claim 6, contour has a most upstream point located in the vicinity of the intersection before recess/6b'/ of said first deflection electrode/6b/ deflecting said jet, with the axis of said ejection nozzle/2/ of said inkjet (figs. 1 & 4; vicinity is a broad term allowing for the contour to be located anywhere in relation to intersection) for the purpose of a counter measure to aerodynamic disturbance

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a first deflection electrode deflecting drops from said jet, in its downstream part, has a recess having a contour; and contour has a most upstream point located

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in the vicinity of the intersection before recess of said first deflection electrode deflecting said jet, with the axis of said ejection nozzle of said inkjet as taught by Ebi et al. into Houston for the purpose of a counter measure to aerodynamic disturbance.

18. Claims 7-14 are rejected under 35 U.S.C. 103(a) as being obvious over Houston (US 4,990,932) as modified by Ebi et al. (US 4,381,513) and Cruz-Urbie (US 4,338,613) as applied to claim 5 above, and further in view of Bajoux (US 6,758,555).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

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Houston as modified by Ebi et al. and Cruz-Urbie does not disclose the following claimed limitations:

*regarding claim 7, recess has symmetry relative to the plane defined by the converging axes of inkjet ejection nozzles

*regarding claim 8, width of recess ranges between two and 10 times the diameter of the ink drops

*regarding claim 9, recess is in the form of an oblong slit of which one opening leads to a part which is the most downstream of first electrode

*regarding claim 10, space between the active surfaces (10,11) of deflection electrodes deflecting a jet derived from a nozzle is substantially constant from upstream to downstream of the electrodes and lies between 4 and 20 times the diameter of the ink drops

*regarding claim 11, one edge the most downstream of a first deflection electrode is more downstream than a surface that is most downstream of recovery gutter

*regarding claim 12, second deflection electrode deflecting an inkjet has a groove along an axis contained in the plane defined by the converging axes of nozzles

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*regarding claim 13, bottom of groove is joined to the active surface of said second electrode via a surface curved transversely along curve radii of greater value than the radius of the ink drops

*regarding claim 14, tongues of said first jet deflection electrode formed either side of recess and second deflection electrode deflecting the same jet are curved transversely along curve radii of greater value than the radius of the ink drops

Bajeux disclose the following:

*regarding claim 7, recess has symmetry relative to the plane defined by the converging axes of inkjet ejection nozzles (col. 6, lines 34-40) for the purpose of deflection electrodes whose active surface are raised to uniform electric potentials

*regarding claim 8, width of recess ranges between two and 10 times the diameter of the ink drops (col. 7, lines 3-4) for the purpose of obtaining deflection performances with a voltage that is significantly lower than the usual voltages

*regarding claim 9, recess is in the form of an oblong slit of which one opening leads to a part which is the most downstream of first electrode (col. 7, lines 5-7) for the purpose of reducing risk of accidental projections of ink on the active surface of the deflection electrodes

*regarding claim 10, space between the active surfaces of deflection electrodes deflecting a jet derived from a nozzle is substantially constant from upstream to downstream of the

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electrodes and lies between 4 and 20 times the diameter of the ink drops (col. 7, lines 8-12) for the purpose of obtaining deflection performances with a voltage that is significantly lower than the usual voltages

*regarding claim 11, one edge the most downstream of a first deflection electrode is more downstream than a surface that is most downstream of recovery gutter (col. 7, lines 13-15) for the purpose of deflection electrodes whose active surface are raised to uniform electric potentials

*regarding claim 12, second deflection electrode deflecting an inkjet has a groove along an axis contained in the plane defined by the converging axes of nozzles (col. 7, lines 16-19) for the purpose of obtaining deflection performances with a voltage that is significantly lower than the usual voltages

*regarding claim 13, bottom of groove is joined to the active surface of said second electrode via a surface curved transversely along curve radii of greater value than the radius of the ink drops (col. 7, lines 20-23) for the purpose of obtaining deflection performances with a voltage that is significantly lower than the usual voltages

*regarding claim 14, tongues of said first jet deflection electrode formed either side of recess and second deflection electrode deflecting the same jet are curved transversely along curve radii of greater value than the radius of the ink drops (col. 7, lines 24-27) for the purpose of deflection electrodes whose active surface are raised to uniform electric potentials

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a recess that has symmetry relative to the plane defined by the converging axes of inkjet ejection nozzles; width of recess ranges between two and 10 times the diameter of the ink drops; recess is in the form of an oblong slit of which one opening leads to a part which is the most downstream of first electrode; space between the active surfaces (10,11) of deflection electrodes deflecting a jet derived from a nozzle is substantially constant from upstream to downstream of the electrodes and lies between 4 and 20 times the diameter of the ink drops; one edge the most downstream of a first deflection electrode is more downstream than a surface that is most downstream of recovery gutter; second deflection electrode deflecting an inkjet has a groove along an axis contained in the plane defined by the converging axes of nozzles; bottom of groove is joined to the active surface of said second electrode via a surface curved transversely along curve radii of greater value than the radius of the ink drops; and tongues of said first jet deflection electrode formed either side of recess and second deflection electrode deflecting the same jet are curved transversely along curve radii of greater value than the radius of the ink drops as taught by Bajoux into Houston as modified by Ebi et al. and Cruz-Urbie for the purposes of reducing overall dimensions of a printing head; obtain deflection performances with a voltage that is significantly lower than the usual voltages; reduce risk of accidental projections of ink on the active surface of the deflection electrodes; and deflection electrodes whose active surface are raised to uniform electric potentials.

19. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Houston (US 4,990,932) in view of Heigeson et al. (US 3,761,953).

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Houston discloses all the claimed limitations except for the following:

*regarding claim 11, one edge the most downstream of a first deflection electrode is more downstream than a surface that is most downstream of recovery gutter

Heigeson et al. discloses the following:

*regarding claim 11, one edge, the most downstream of a first deflection electrode/22/, is more downstream than a surface that is most downstream of recovery gutter/catcher, 24/ (fig. 1; col. 2, lines 53-59)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize one edge the most downstream of a first deflection electrode is more downstream than a surface that is most downstream of recovery gutter as taught by Heigson et al. into Houston for the purpose of recirculating and reusing collected ink.

20. Claims 15 is rejected under 35 U.S.C. 103(a) as being obvious over Houston (US 4,990,932) as modified by Ebi et al. (US 4,381,513) and Cruz-Urbie (US 4,338,613) as applied to claim 5 above, and further in view of Keeling et al. (US 5,481,288).

Houston as modified by Ebi et al. and Cruz-Urbie does not disclose the following claimed limitations:

*regarding claim 15, nozzles have different diameters

Keeling et al. disclose the following:

*regarding claim 15, nozzles have different diameters (col. 6, lines 20-30)

It would have been obvious a the time the invention was made to a person having ordinary skill in the art to utilize nozzles having different diameters as taught by Keeling et al.

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into Houston as modified by Ebi et al. and Cruz-Urbie for the purpose of providing different ink drop sizes image resolution.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sturm (US 4,375,062) includes a continuous stream ink jet printer with flared electrodes for controlling airflow affecting drops. Hou (US 4,596,990) includes a first and second deflection electrode (fig. 3; 34a" and 34b") with a gutter/catcher,36 for receiving droplets which serves as a point located on an axis defined by convergence of axes defined by nozzles. Lovelady (US 4,470,052 & US 3,596,276) includes positioning of the catcher above the bottom most edge of a deflection plate

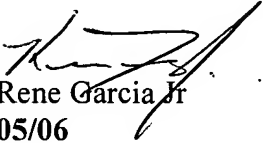
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Communications with the USPTO

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rene Garcia, Jr. whose telephone number is (571) 272-5980. The examiner can normally be reached on M-F 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent . Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Rene Garcia Jr
05/06


STEPHEN MEIER
SUPERVISORY PATENT EXAMINER